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PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year) See Form PCT/ISA/210
(sheet 2)

Applicant's or agent's file reference
X 22/yh/A1

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/EP2005/000762

International filing date (day/month/year)

27.01.2005

Priority date (day/month/year)

02.04.2004

International Patent Classification (IPC) or both national classification and IPC
B01 D63/04, B01 D65/00, C02F3/12, B01 D63/02, C02F1/44

Applicant

KOCH MEMBRANE SYSTEMS GMBH

1. This opinion contains indications relating to the following items:

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Box No. I Basis of the opinion |
| <input type="checkbox"/> | Box No. II Priority |
| <input type="checkbox"/> | Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI Certain documents cited |
| <input type="checkbox"/> | Box No. VII Certain defects in the international application |
| <input checked="" type="checkbox"/> | Box No. VIII Certain observations on the international application |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/EP

Authorized officer

Faxsimile No.

Telephone No.

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/EP2005/000762

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
- This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rule 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
- a. type of material

a sequence listing

table(s) related to the sequence listing
 - b. format of material

in written format

in computer readable form
 - c. time of filing/furnishing

contained in the international application as filed.

filed together with the international application in computer readable form.

furnished subsequently to this Authority for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table(s) relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY		International application No. PCT/EP2005/000762	
Box No. V Reasoned statement under Rule 43bis-1(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement			
1. Statement			
Novelty (N)	Claims	<u>1-10</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-10</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-10</u>	YES
	Claims		NO
2. Citations and explanations:			
1 Reference is made to the following documents:			
D1: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 06, 22 September 2000 (2000-09-22) & JP 2000 084374 A (TORAY IND INC; TORAY ENG CO LTD), 28 March 2000 (2000-03-28)			
D2: PATENT ABSTRACTS OF JAPAN vol. 2000, no. 03, 30 March 2000 (2000-03-30) & JP 11 342321 A (TORAY IND INC; TORAY ENG CO LTD), 14 December 1999 (1999-12-14)			
D3: PATENT ABSTRACTS OF JAPAN vol. 1998, no. 09, 31 July 1998 (1998-07-31) & JP 10 085564 A (KANEKA FUCHI CHEM IND CO LTD), 7 April 1998 (1998-04-07)			
D4: PATENT ABSTRACTS OF JAPAN vol. 011, no. 124 (C-416), 17 April 1987 (1987-04-17) & JP 61 263605 A (TOSHIBA CORP), 21 November 1986 (1986-11-21)			
2 Prior art			
The problem of holding, supporting and preventing "entanglement" of neighbouring modules for bundles of hollow fibres fixed at one end is known from the prior art.			
D4 shows a cage construction (9, 10) for an embodiment with suspended fibres.			
D3 shows a frame construction (9, 10) with u-shaped			

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/EP2005/000762

Box No. V

Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability:
citations and explanations supporting such statement

holding brackets (9a) for u-shaped bundles of hollow fibres.

D1 and D2 are directed at the supporting of modules according to the application (hollow fibres only cast in at the bottom).

3 Closest prior art

Document D1 is considered to be the closest prior art. It discloses (the references between parentheses relate to said document) a membrane filter for operating while submerged, with

- i) closed hollow fibre membranes (3, 4) cast in at the bottom and free at the top,
- ii) a base element (6) fastened to a frame and having a permeate collecting chamber,
- iii) tubes (7, 11), which are connected at both ends and are connected at the top to a collecting line (10) and also
- iv) fibre holders (7) on the tubes for guiding the hollow fibres

from which the subject matter of independent claim 1 differs in that the fibre holders are not provided in a u-shaped form. According to D1, either a web is used (Figures 4 and 5) or box-shaped frames, which are open on all sides (cf. also D2, figure 3). Although the box-shaped frame likewise has a u-shaped structure (before assembly of the top plate (7)), it is unitary and extends over the entire length of the module.

The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

The problem addressed by the present invention can therefore be considered that of simplifying the

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2005/000762

Box No. V

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structure according to D1 with regard to the effort involved in its assembly and with regard to the ease with which it can be serviced, while it nevertheless has an effective supporting function.

The use of a number of u-shaped brackets that are open on one side according to claim 1 is not disclosed by the prior art. The subject matter of claims 1-10 therefore meets the requirements of PCT Article 33(3). However, the inclusion of essential features in claim 1 pursuant to PCT Article 6 is still required (cf. Box VIII i).

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/EP2005/000762

Box No. VIII

Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

- i For the precise definition of the position of the web, it appears necessary for the following points in claim 1 to be made more precise, pursuant to PCT Article 6:

"... a number of fibre holders... for laterally guiding... to the tubes..." (essential feature);

"... which... a web extending between the tubes and end limbs fastened to the tubes..." (clarification);

"... reach around... also at the ends before the tubes and do not enclose them in an annular manner." (essential feature).

- ii Similarly, clarification of claim 2 appears to be required, pursuant to PCT Article 6, in the following form:

"projections are formed onto the web of the brackets between the limbs..."

- iii The subject matter of claim 3 appears to be clear with the following amendments, pursuant to PCT Article 6:

"that the webs of the brackets have on their side facing away from the projections and limbs a profile with depressions and that the limbs and projections forming compartments..."

The second amendment can also be applied to claim 4.